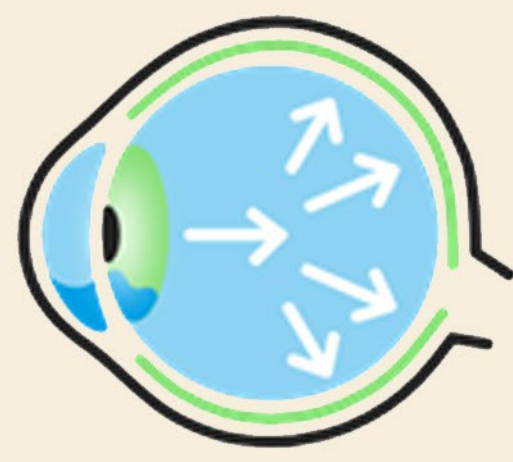


Factors Affecting Follow-Up Adherence of Glaucoma Patients

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Introduction



- Glaucoma is a leading cause of blindness in India and Asia & disproportionately affecting women.
- Strict adherence to follow-up and medication is required to protect vision loss
- Patients who come early impose an unnecessary burden on the hospital system
- Understanding the reasons for delay in follow-up can facilitate counselling and glaucoma care

Aim:

To understand the factors (beyond demographics and beliefs) associated with non-adherence to the consultant's follow-up advice by persons with glaucoma



Importance of Adherence:

Crucial to prevent disease progression and vision loss.



Context:



Chronic non-communicable diseases (NCDs) require continuous care, which is challenging in low- and middle-income countries due to socioeconomic barriers and lack of mandated follow-up

Methods

Data Source:

Retrospective analysis of Electronic Medical Records (EMR) from Aravind Eye Care System (AECS), including

13,888 visits

by

2,622 patients

- 3,500 patients data out of 91,241 glaucoma suspects referred to the glaucoma clinic, AEH Madurai between 2017 and 2020
- Removed
 - 209 patients with incomplete data
 - 669 patients visited only once

Analysis: Logistic regression using R software to analyze follow-up adherence patterns.

Data description:

Adherence: (To the given follow up window)

- Early - Patient comes ahead
- Delayed - Patient comes later
- On-time - Patient comes within the threshold of days

Demographic and patient-level information

- Classified as below 40, 40–60 & above 60 years
- Town/village is mapped using GoogleMaps & distance from home to hospital is captured in kms
- Patients having diabetes, cataract, or immature cataract are identified using dummy variables

Interventions Studied:

Clinical Interventions:

- VA (logMAR) and IOP are measured in all visits
- Classified as normal IOP in both eyes or high IOP in one or both eyes (IOP >20 mmHg is high)
- A few patients received surgery or laser treatment
- Others receive only medication treatment
- Follow-up advice is given to both sets of patients
- Post-surgery & laser visits are grouped into first, second, third, fourth, or fifth and subsequent
- Captured paid or free for the particular visit

Table 1. Data description by adherence to follow-up advice. Number of patients (% of sample data), unless specified otherwise.

	Delay	Early	On-time	Total	Chi-sq	P value
Total Visits	4,688 (34)	3,182 (23)	6,018 (43)	13,888		
Age Groups						
Less than 40 years	381 (35)	248 (23)	451 (42)	1,080	5	0.200
40 to 60 years	1,831 (33)	1,211 (23)	2,256 (43)	5,298		
Above 60 years	2,476 (33)	1,723 (23)	3,311 (44)	7,510		
Gender						
Female	2,171 (34)	1,548 (24)	2,669 (43)	6,388	16	<0.001
Male	2,517 (34)	1,634 (22)	3,349 (45)	7,500		
Distance						
Distance to hospital (in km)*	109 (239)	97.5 (185)	109 (200)	106 (211)	3.7	0.025
Patient History						
Visual Acuity LogMAR*	0.908 (0.828)	1.000 (0.822)	0.998 (0.830)	0.944 (0.825)	19.4	<0.001
Diabetes	1,537 (31)	1,134 (23)	2,222 (45)	4,893	20	<0.001
Non-Diabetic	3,151 (35)	2,048 (23)	3,796 (42)	8,995		
Hypertensive	1,578 (33)	1,126 (24)	2,070 (43)	4,774	3	0.300
Non-Hypertensive	3,110 (34)	2,056 (23)	3,948 (43)	9,114		
Cataract/Immature Cataract	1,105 (37)	553 (18)	1,359 (45)	3,017	47	<0.001
Non-Cataract	3,583 (33)	2,629 (24)	4,659 (43)	10,871		
Follow-up date prescribed in previous visit						
Less than 2 months	2,584 (30)	1,623 (25)	4,509 (52)	8,716	714	<0.001
Less than 6 months	1,222 (43)	789 (27)	859 (30)	2,870		
More than 6 months	882 (39)	770 (33)	650 (28)	2,302		
Glaucoma diagnosis						
Primary	2,799 (34)	1,862 (22)	3,654 (44)	8,315	63	<0.001
Secondary/Other	593 (35)	355 (21)	748 (44)	1,696		
Juvenile	42 (40)	11 (10)	52 (50)	105		
Suspect	518 (37)	391 (28)	495 (35)	1,404		
No Glaucoma	736 (31)	563 (24)	1,069 (45)	2,368		
IOP levels						
Normal IOP (in both eyes)	1,461 (34)	819 (25)	2,061 (41)	4,341	70	<0.001
High IOP (one/both eyes)	3,227 (34)	2,363 (19)	3,957 (47)	9,547		
Surgery status						
Pre-surgery	2,795 (34)	1,769 (23)	3,138 (41)	7,702	60	<0.001
First post-surgery visit	80 (17)	214 (47)	167 (36)	461		
Second post-surgery visit	194 (21)	158 (18)	551 (61)	903		
Third post-surgery visit	246 (23)	192 (18)	617 (59)	1,055		
Fourth post-surgery visit	292 (33)	187 (21)	398 (46)	877		
Four post-surgery visits	1,081 (37)	662 (23)	1,147 (40)	2,890		
Laser intervention status						
Pre-surgery	4,568 (33)	3,088 (23)	5,833 (43)	13,489	21	0.002
First post-surgery visit	15 (21)	8 (11)	50 (68)	73		
Second post-surgery visit	27 (32)	22 (27)	34 (41)	83		
Third post-surgery visit	78 (32)	64 (26)	101 (42)	243		
Paying status						
Free patients	1,130 (35)	743 (23)	1,329 (42)	3,202	6	0.044
Paying patients	3,558 (33)	2,439 (23)	4,689 (44)	10,686		

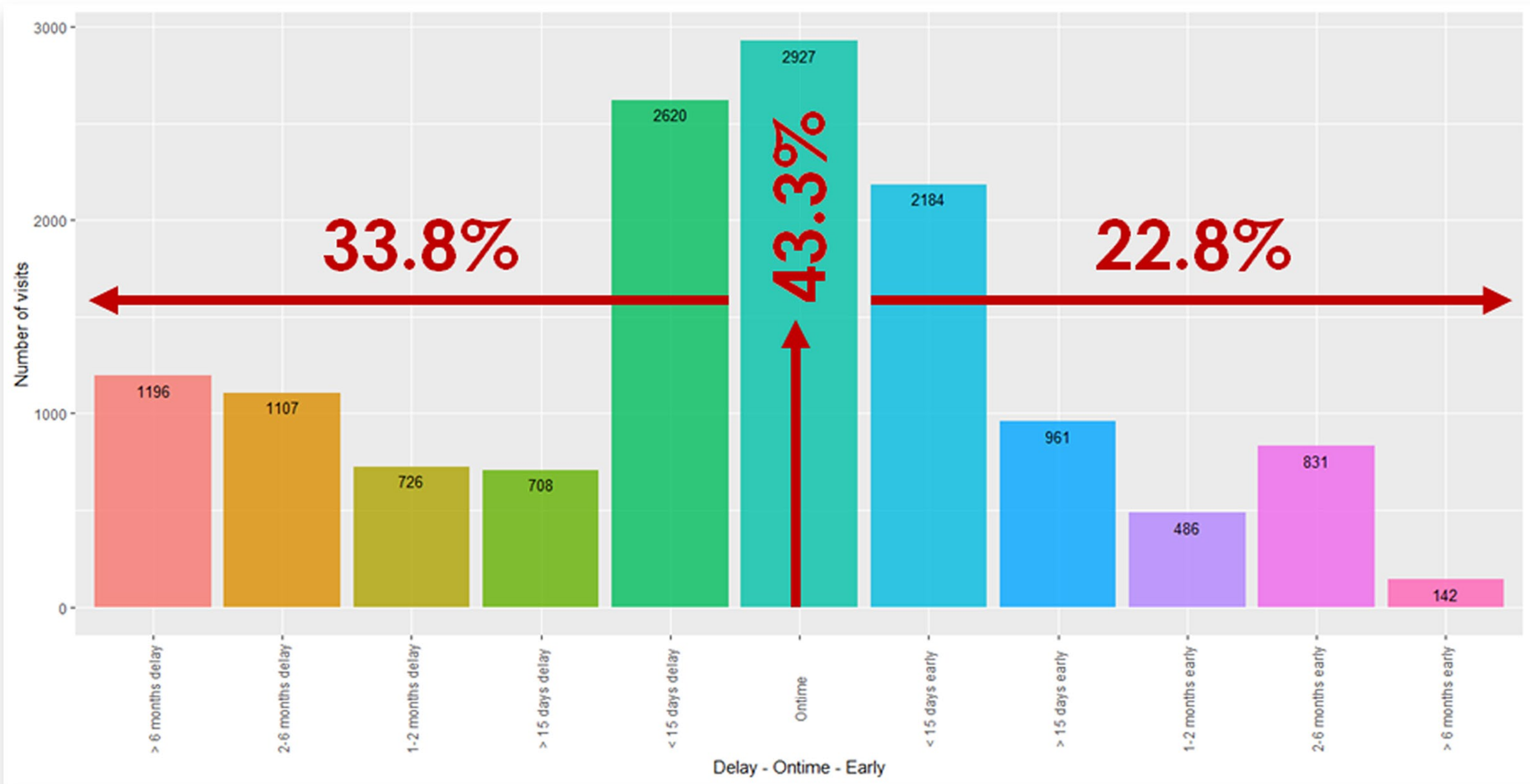
*For 'Distance to hospital (in km)' and 'Visual Acuity LogMAR', the summary statistics indicate mean (standard deviation). p values in bold indicate statistical significance.

Such patterns suggest that clinical factors may impact adherence decisions of the patients

Effect of adherence on visual acuity

- 2,143 patients have glaucoma in both eyes and 345 have it in one eye
- Higher proportion of delayed visits resulted in worsening of VA for patients who have glaucoma in both eyes & one eye
- VA for the same 345 patients, normal eye was stable

Results



Histogram of delay, on time, and early visits

Discussion



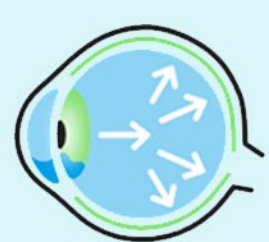
Factors impacting delayed care-seeking

- MVLR: 4,688** delayed visits across **2,485** patients compared against **6,018** on-time visits
- Age/gender & distance are not impacting patient's decision
- Diabetes (but not hypertensive) & paying patients are less likely to delay care
- Follow-up date within 2 months are less likely to delay
- Glaucoma suspects are more likely to delay



Factors impacting early care-seeking

- MVLR:** Compares 3,182 early visits across 2,307 patients with 6,018 on-time visits
- Age/gender & distance is not impacting patient's decision
- No difference in coming early and on-time: Patients with diabetes, hypertensive & paying
- Distance is not impacting
- Follow-up date within 2 months & 6 months are less likely to come early



Confirmed glaucoma is more likely to come early than non glaucoma



Patients with Better VA & High IOP are less likely to come early



First visit after surgery or Laser – More likely to come early

Conclusion

Factors significantly associated with on-time adherence



Diabetes mellitus



Follow-up within 2 months

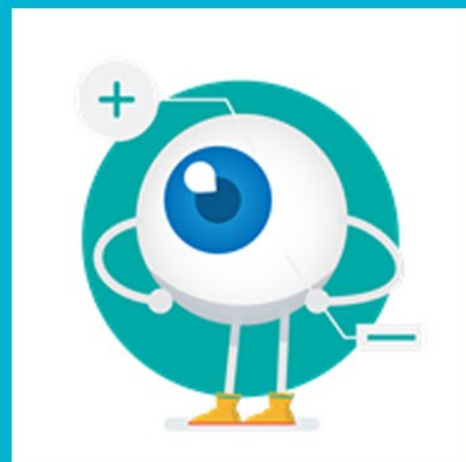


Therapeutic intervention: Surgery/Laser

Delayed care seeking worsening VA in the eye with glaucoma



Personalized counselling with testimonials & reminders are advised



For comments & feedback:
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